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(56) Documents Cited

EP 0435614 A2 EP 0404452 A2 EP 0378775 A2
WO 89/00320 A1 US 5119414 A US 4126768 A

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(54) **Communication system**

(57) A telephone set has a built-in card reader, having non-contact data transfer means.

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The date of filing shown above is that provisionally accorded to the application in accordance with the provisions of Section 15(4) of the Patents Act 1977 and is subject to ratification or amendment.

Having, in patent applications parallel to the present one, described the pocket-size personal data carrier, also referred to briefly as "travel pass" in some detail and also defined the inventive features in respect of its data processing sequences and dialogues with a local terminal, the role (as referred to in the parent application) of public communication systems in transmitting those sequences and dialogues over an unlimited distance, will be addressed in this present paper.

An electronic data carrier for interfacing with multiple service providers is being proposed not as a curiosity but for the convenience and improved security of people dealing with other people. This applies not only to all those cases where the data carrier is a financial instrument dispensing cash or mediates the debiting of an account but also for the equally important moments when fresh value has to be transmitted to a data carrier.

This updating process can be carried out at a Bank equipped with a Reader connected to the Bank's computer. The security measures described in this series of applications together with the referenced material are strict and efficient, irrespective of where the updating is taking place. However, from the point of view of the individual card bearer - especially on all those occasions where the card dispenses virtual cash - , the need to go to the nearest ATM, let alone to the nearest branch of one's Bank - can become an often recurring inconvenience.

It is for this reason that existing private communication facilities such as the mobile phone and the worldwide telephone network are a natural ally in utilizing the advantages of a digitally operated personal card, provided the requisite terminals are made available for dependable and rapid remote fund transfer.

The techniques described by the author in earlier patents (GB 2092 344, GB 2,075,732, GB 2,057,740 and GB 2,130,412) lend themselves well to the maintaining of confidentiality and authenticity in the transmission of data over the phone lines.

On the basis of this prior information and the instructions given in the priority papers (WO 93/02430), both public and private telephone connected terminals can be built.

The private telephone in a person's home needs to adopt to these new possibilities. A combined product, both telephone and card-terminal, is therefore proposed. These can work side by side as independent systems but require a dual use telephone set. Equally, public telephones might be modified to accommodate in their structure a card-update terminal. Finally, especially in places of public transport, there may be dedicated telephone-connected Card Update Units. These units need not be equipped with PIN entry key boards for the updating of those cards which already have a keyboard for a.o. the recalling of expenditures and status reports.

Keyboardless public Update Units suitable also for outdoor installations would be fairly inexpensive and could be set up near major bus stops, in railway stations, on trains, boats, and in aircraft.

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C L A I M S

1. A telephone set connectable to the existing network of telephone lines and switching stations characterized by
built-in facilities to connect by non-contact data transfer means described in the herein cited literature, with a 'travel pass' as herein defined and to communicate with a distant smart card terminal on the basis of agreed "travel pass" protocol standards.
2. A telephone set as in Claim 1, wherein the protocol standard includes authenticity checking procedures as described in GB 2,057,740 and GB 2,092,344.
3. A telephone set as in Claim 1 wherein the data transmitted to a distant station are scrambled in a continuous chain of variable length data words as set out in GB 2,130,412 B.
4. A telephone set as in Claim 1, or in Claims 2 and 3, characterized by an all-weather shroud, a slot for inserting a pass for non-contact connection with the telephone set and by the absence of a dialling keyboard, furthermore by means in the electronic circuit within the telephone set to receive from the "travel pass" in a scrambled form the telephone number to be sent out to a Bank, and further means to descramble the number and to adapt it to the locally used dialling form, and to send it out via the general telephone system.
5. An electronic fund transfer system comprising a travel pass device and utilizing a public communication system to mediate private payments between spatially separated places wherein during each update transaction the date and the time of the transaction is recorded in both the computer memory of the account system concerned as also in the said "travel pass" involved in an update operation, and no subsequent update attempt is executed without first testing the equalness of the two records of the dates and times of the preceding update, and, if these are not equal, the tele-connection is aborted.
6. An electronic fund transfer system comprising a travel pass device and a telephone terminal connected to a communication system to mediate private payments between spatially separate places one of which is an issue location of funds wherein said pass is relieved from executing any computational tasks by delegating them to the computerized telecommunication terminal insofar as calculations required in the course of a transaction are carried out by said terminal's own computing facilities.

ties, and wherein assurance for correctness of the results entered into a travel pass is obtained by a procedure which comprises:

- (a) calculation of a transaction result in the terminal along one of several possible ways of performing the calculation
- (b) transmission of the result to the data carrier or "travel pass"
- (c) readout of the result from the travel pass
- (d) calculation of the transaction by the terminal electronics along a second of possible ways of obtaining the required computing result
- (e) comparing the second result with the figure returned through readout from the pass under (c)
- (f) if the compared figures are equal, a comparator output is generated or visibly displayed permitting the processor controller of the data carrier to enter the result into its non-volatile memory.

Amendments to the claims have been filed as follows

1. A data transfer terminal for exchanging data with a non-contact electronic pass device, said terminal comprising a telephone set connectable to the existing network of telephone lines and switching stations, said telephone set having built-in facilities to connect by non-contact data transfer means with an electronic device and to communicate with a distant smart card terminal.
2. A terminal as in Claim 1, wherein communication is carried out on the basis of protocol standards including authenticity checking procedures as described in GB 2,057,740 and GB 2,092,344.
3. A terminal as in Claim 1 wherein the data transmitted to a distant station are scrambled in a continuous chain of variable length data words as set out in GB 2,130,412 B.
4. A terminal as in Claim 1, or in Claims 2 and 3, characterized by an all-weather shroud, a slot for inserting a pass for non-contact connection with the telephone set and by the absence of a dialling keyboard, furthermore by means in the electronic circuit within the telephone set to receive from the device in a scrambled form the telephone number to be sent out to a Bank, and further means to descramble the number and to adapt it to the locally used dialling form, and to send it out via the general telephone system.
5. An electronic fund transfer system comprising a travel pass device and utilizing a public communication system to mediate private payments between spatially separated places wherein during each update transaction the date and the time of the transaction is recorded in both the computer memory of an accountancy system concerned and also in said travel pass device involved in an update operation, and no subsequent update attempt is executed without first testing the equality of the two records of the dates and times of the preceding update, and, if these are not equal, the teleconnection is aborted.

6. An electronic fund transfer system comprising a travel pass device and a telephone terminal connected to a communication system to mediate private payments between spatially separate places one of which is an issue location of funds wherein said pass is relieved from executing any computational tasks by delegating them to the computerized telecommunication terminal insofar as calculations required in the course of a transaction are carried out by said terminal's own computing facilities, and wherein assurance for correctness of the results entered into a travel pass is obtained by a procedure which comprises:
- (a) calculation of a transaction result in the terminal along one of several possible ways of performing the calculation
 - (b) transmission of the result to the data carrier or "travel pass"
 - (c) readout of the result from the travel pass
 - (d) calculation of the transaction by the terminal electronics along a second of possible ways of obtaining the required computing result
 - (e) comparing the second result with the figure returned through readout from the pass under (c)
 - (f) if the compared figures are equal, a comparator output is generated or visibly displayed permitting the processor controller of the data carrier to enter the result into its non-volatile memory.

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Patents Act 1977
Examiner's report to the Comptroller under Section 17
(The Search report)

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Relevant Technical Fields

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(ii) Int Cl (Ed.6) G06K, H04M

Search Examiner
J DONALDSON

Date of completion of Search
27 OCTOBER 1995

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii) ONLINE: WPI

Documents considered relevant following a search in respect of Claims :-
1 TO 3, AS FILED ON
12 OCTOBER 1995

Categories of documents

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| <p>X: Document indicating lack of novelty or of inventive step.</p> <p>Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.</p> <p>A: Document indicating technological background and/or state of the art.</p> | <p>P: Document published on or after the declared priority date but before the filing date of the present application.</p> <p>E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.</p> <p>&: Member of the same patent family; corresponding document.</p> |
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Category	Identity of document and relevant passages		Relevant to claim(s)
X	EP 0435614 A2	(CANON) see column 2, lines 16-40, column 3, lines 27-31, column 11, line 32 to column 12, line 26	1
X	EP 404452 A2	(CANON) see column 3 lines 25-48, column 4, line 43 to column 5, line 38	1
X	EP 0378775 A2	(STORNO) see column 2, lines 3-36, column 3, lines 37-41	1
X	WO 89/00320 A1	(SGS-THOMSON) see Abstract	1
X	US 5119414	(IZUMI) see column 3, lines 5-28, column 3, line 61 to column 4, line 5	1
X	US 4126768	(GRENZOW) see column 5, lines 1-35, column 8, lines 48-56	1

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).